

## CLAIMS

What is claimed is:

1 1. An apparatus comprising:  
2 a decode unit which receives a first encoded interlaced video signal including  
3 encoded interframe motion compensation data, and responsively transmits  
4 a decoded interlaced video signal and associated interframe motion  
5 compensation data; and  
6 a de-interlace unit which converts said first interlaced video signal to a first  
7 progressive video signal, and which, responsive to said interframe motion  
8 compensation data, selects a region of said first interlaced video signal for  
9 a different type of conversion, said selection based on the change in  
10 position of said region between successive video frames.

1 2. The apparatus as claimed in claim 1 wherein said encoded first interlaced  
2 video signal is an MPEG-2 signal.

1 3. The apparatus as claimed in claim 1 wherein said encoded first interlaced  
2 video signal is an MPEG-1 signal.

1 4. The apparatus as claimed in claim 1 further including a scaling unit which  
2 converts said first progressive video signal to a second progressive video signal at a  
3 different resolution.

1 5. The apparatus as claimed in claim 4 wherein said first interlaced signal is a  
2 standard television signal and said second progressive video signal is an HDTV signal.

1           6. The apparatus as claimed in claim 5 wherein said standard television signal is  
2 a 480i signal and said HDTV signal is a 720p signal.

1           7. The apparatus as claimed in claim 5 wherein said standard television signal is  
2 a PAL standard video signal and said HDTV signal is a 720p signal.

1           8. The apparatus as claimed in claim 4 wherein said first interlaced signal is an  
2 HDTV signal and said second progressive video signal is an HDTV signal.

1           9. The apparatus as claimed in claim 8 wherein said interlaced HDTV signal is a  
2 1080i and said progressive HDTV signal is a 720p signal.

1           10. The apparatus as claimed in claim 4 further including a interlacer unit which  
2 converts said second progressive video signal to a second interlaced video signal.

1           11. The apparatus as claimed in claim 10 wherein said first interlaced signal is a  
2 standard television signal and said second interlaced video signal is an HDTV signal.

1           12. The apparatus as claimed in claim 11 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 1080i signal.

1           13. The apparatus as claimed in claim 11 wherein said standard television signal  
2 is a PAL standard video signal and said HDTV signal is a 1080i signal.

1           14. The apparatus as claimed in claim 10 wherein said first interlaced signal is an  
2 HDTV television signal and said second interlaced video signal is a standard definition  
3 TV signal.

1           15. The apparatus as claimed in claim 14 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 1080i signal.

1           16. The apparatus as claimed in claim 14 wherein said standard television signal  
2 is a PAL standard signal and said HDTV signal is a 1080i signal.

1           17. A method comprising the steps of:  
2           receiving a first encoded interlaced video signal including encoded interframe  
3           motion compensation data, said first interlaced video signal comprised of  
4           data for generating an interlaced video image, and said encoded interframe  
5           motion compensation data identifying motion of a region of said interlaced  
6           video image;  
7           separating said interframe motion compensation data from said first interlaced  
8           video signal;  
9           de-interlacing said region of said first interlaced video image using a first de-  
10          interlace technique; and  
11          de-interlacing the remaining portions of said first interlaced video image using a  
12          second de-interlace technique.

1           18. The method as claimed in claim 17 wherein said encoded interlaced video  
2 signal is an MPEG-2 signal.

1           19. The method as claimed in claim 17 wherein said encoded interlaced video  
2 signal is an MPEG-1 signal.

1           20. The apparatus as claimed in claim 17 wherein said first de-interlace technique  
2 comprises selecting only even or only odd row data of said interlaced data.

1           21. The apparatus as claimed in claim 20 including the step of interpolating  
2 between said selected even or odd interlaced rows.

1           22. The apparatus as claimed in claim 17 further including the step of scaling  
2 said de-interlaced region of said first interlaced image and said remaining de-interlaced  
3 portions of said interlaced image to a first progressive video signal at a different  
4 resolution.

1           23. The apparatus as claimed in claim 22 wherein said first interlaced signal is a  
2 standard television signal and said first progressive video signal is an HDTV signal.

1           24. The apparatus as claimed in claim 23 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 720p signal.

1           25. The apparatus as claimed in claim 23 wherein said standard television signal  
2 is a PAL standard video signal and said HDTV signal is a 720p signal.

1           26. The apparatus as claimed in claim 22 wherein said first interlaced signal is an  
2 HDTV television signal and said first progressive video signal is a standard definition  
3 signal.

1           27. The apparatus as claimed in claim 26 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 720p signal.

1           28. The apparatus as claimed in claim 26 wherein said standard television signal  
2 is a PAL standard video signal and said HDTV signal is a 720p signal.

1           29. The apparatus as claimed in claim 22 further including the step of interlacing  
2 said first progressive video into a second interlaced video signal.

1           30. The apparatus as claimed in claim 26 wherein said first interlaced signal is a  
2 standard television signal and said second interlaced video signal is an HDTV signal.

1           31. The apparatus as claimed in claim 26 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 1080i signal.

1           32. The apparatus as claimed in claim 26 wherein said standard television signal  
2 is a PAL standard video signal and said HDTV signal is a 1080i signal.

1           33. The apparatus as claimed in claim 22 wherein said first interlaced signal is an  
2 HDTV television signal and said second interlaced video signal is a standard definition  
3 signal.

1           34. The apparatus as claimed in claim 33 wherein said standard television signal  
2 is a 480i signal and said HDTV signal is a 1080i signal.

1           35. The apparatus as claimed in claim 26 wherein said standard television signal  
2 is a PAL standard video signal and said HDTV signal is a 1080i signal.

1           36. The apparatus as claimed in claim 1 wherein said different type of conversion  
2 comprises selecting only even or only odd rows of said first interlaced data to generate  
3 said first progressive data.

1           37. The apparatus as claimed in claim 10 wherein said de-interlace unit  
2 interpolates between said selected even or odd interlaced rows.

1           38. A method for converting an encoded video signal comprising the steps of:  
2           determining a source video data type encoded in said encoded video signal;  
3           determining whether said source video data type is one for which interframe  
4                       motion data should be for conversion;  
5           selecting a particular frame rate conversion ratio if said source video data type  
6                       may be converted without use of said interframe motion compensation  
7                       data; and  
8           using said frame rate conversion ratio to convert each frame of said source video  
9                       data type to one or more frames of a destination video data type.

1           39. The method for converting an encoded video signal as claimed in claim 38  
2 wherein said encoded video signal is an MPEG-2 signal.

1           40. The method for converting an encoded video signal as claimed in claim 38  
2 wherein said encoded video signal is an MPEG-1 signal.

1           41. The method for converting an encoded video signal as claimed in claim 38  
2 including the additional step of using said interframe motion data for conversion if said  
3 source video data type is one for which interframe motion data should be used.

1           42. The method for converting an encoded video signal as claimed in claim 41  
2 wherein said interframe motion compensation data is used to identify regions of said  
3 source video data type which are in motion.

1           43. The method for converting an encoded video signal as claimed in claim 42  
2 including the additional step of converting said identified regions using a different  
3 conversion technique from the remaining portions of said source video data type.

1           44. The method for converting an encoded video signal as claimed in claim 43  
2 wherein said source video data type is an interlaced video data type and said destination  
3 video data type is a progressive video data type.

1           45. The method for converting an encoded video signal as claimed in claim 44  
2 wherein said interlaced video data type is a 480i standard definition television signal.

1           46. The method for converting an encoded video signal as claimed in claim 44  
2 wherein said interlaced video data type is a PAL format standard definition television  
3 signal.

1           47. The method for converting an encoded video signal as claimed in claim 44  
2 wherein said interlaced video data type is a 1080i format HDTV signal.

1           48. The method for converting an encoded video signal as claimed in claim 38  
2 wherein said source video data type is a 24 frame/second movie encoded as a 480i  
3 standard definition video signal.

1           49. The method for converting an encoded video signal as claimed in claim 48  
2 wherein said destination video signal is a 60 frame/second signal.

1           ~~50.~~ An apparatus comprising:  
2           a de-interlacer, which converts an interlaced video signal to a progressive scan  
3           video signal, responsive to interframe motion compensation data from a  
4           compressed video signal.

1           51. The apparatus as claimed in claim 50, wherein said compressed video signal  
2 is a compressed version of said interlaced video signal.

1           ~~52.~~ A method for utilizing interframe motion compensation data of a compressed  
2 first interlaced video signal as an input to the process of de-interlacing the said first  
3 interlaced video signal.

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